Department of Orthopedic Pathology

Donald E. Sweet, M.D.
Chairperson
Date of Appointment - 5 December 1982

MISSION

Excellence in orthopedic pathology consultation, education, and research for the Department of Defense, the Veterans Administration, other federal agencies, and civilian pathologists at the national and international level.

STAFF

Medical

Donald E. Sweet, M.D., Chairperson
Tuyethoa N. Vinh, M.D., Assistant Chairperson
Kris M. Shekitka, Col, USAF, MC, Staff Pathologist
Robert Wolov, CDR, MC, USNR, Flight Surgeon/Staff Pathologist
Lent C. Johnson, M.D., Visiting Scientist/Investigator

Administrative

Jean C. Banks, Secretary

CONSULTATION

Consultation Cases	Received
Military	243
Federal (VAH/PHS et al)	98
Civilian	807
Interdepartmental consults & x-ray tranfers	417

The department was assigned approximately 1,565 cases for review: 852 new cases, 293 new sequences (material) on old cases, 417 intramural consults and radiologic transfers. This review entailed the study of an estimated 9,096 x-rays (45,480 radiographic images), approximately 5,448 of which were preparedfor copy, and the examination of an estimated 6,422 contributor slides, 9,633 recuts, and 9,135 immunohistochemical stains, special stains, and studies. This resulted in rendering 1,149 final, 417 consultative, and 893 phone reports, with an average turnaround time of 4.24 days. These figures do not include an almost equal number of provisional interim reports and follow-up letters. Of these cases, 305 were cases without contributor diagnoses, 563 were without diagnostic change, 255 had minor diagnostic changes, and 25 had major diagnostic changes.

Approximately 332 gross specimens were studied and dissected, including metabolic bone cases, with the majority being specimen x-rayed. Approximately 60% of the cases represent tumor or tumorlike conditions. The department remains especially interested in cases of metabolic bone desease, avascular necrosis, lipomas of bone and related lesions, osteofibrous dysplasia, and reactions to prosthetic implants.

EDUCATION

The Department of Orthopedic Pathology's annual commitment to education through its courses, presentations, guest lectures, and trainee program provided 1648 man-days of training during 1995. This does not include exhibits and/or posters.

A. Courses (Total 1,209 man-days)

One hundred twenty hours during the 3-week Orthopedic Pathology and Basic Science Course for military orthopedic surgery residents (2-20 October 1995/20 students) [DES/STAFF]; 54 (CME) hours for the military, federal, and civilian 1-week AFIP/ARP-cosponsored Orthopedic Pathology Course (2-7 April 1995/52 students) [DES/STAFF+]; 12 hours for the six (1995) Radiologic- Pathology Courses for radiology residents (1,200 plus students) [DES]; 55 hours for the Canadian Orthopedic Association Basic Science and Orthopedic Pathology Course (17-22 September 1995/40 students) [DES]; 4 hours International Academy of Pathology Short Course; "Radiologic/Pathologic Correlation of Solitary Bone Lesions," Toronto, Canada (17 March 1995/30 students) [DES]; and 93 man-days of visitor study and board preparation for military, federal, and civilian medical students, pathologists, orthopedic surgeons, and fellows etc. (5+ trainees) [staff].

B. Visiting Professorships, Consultants, and Guest Lectures (Total 414 man-days)

1. "Orthopedic Oncology Conference," Department of Orthopedic Surgery, WRAMC, bimonthly. [TNV, DES] 48 hours
2. "Pathogenesis of Bone Neoplasia, Arthritis, Non-neoplastic Bone Disorders, Radiologic/ Pathologic Correlation of Skeletal Leisons," Labs, Uniformed Services University of the Health Sciences, Bethesda, Maryland, 3, 5, and 6 January 1995. [DES] 7 hours
3. "Growth and Development of Bone, Pathogenesis of Primary Bone Tumors, Metabolic, Inflammatory, Circulatory and Paget's Disease of Bone," Georgetown University School of Medicine, Washington, D.C., 27, 30, and 31 March 1995. [DES] 3 hours
4. Orthopedic Surgery Research Day, WRAMC, "Disorders of Cortical Bone Remodeling" and "Pathogenesis of Osteonecrosis and Ischemic Ossification," Washington, D.C., 2 May 1995. [DES] 1 hour
5. ARP Residents Day/AFIP, "Pathogenesis of Primary Bone Tumors," Washington, D.C., 15 September 1995. [DES] 1 hour
6. Visiting professor, Orthopedic/Hand Surgery Day, "Tumors of the Upper Extremity" and "Pathogenesis of Osteonecrosis," Maricopa Medical Center, Phoenix, Arizona, 4 November 1995. [DES] 3 hours
7. "Osteonecrosis and Circulatory Disorders of Bone," Department of Pathology, National Naval Medical Center, Bethesda, Maryland, 14 November 1995. [DES] 2 hours
8. "Infectious Disease of Bone," Department of Pathology, National Naval Medical Center, Bethesda, Maryland, 21 November 1995. [TNV] 2 hours
9. "Reaction to Prosthetic Debris," Department of Pathology, National Naval Medical Center, Bethesda, Maryland, 28 November 1995. [TNV] 1 hour
10. "Metabolic and Paget's Disease of Bone," Department of Pathology, National Naval Medical Center, Bethesda, Maryland, 28 November 1995. [KMS] 2 hours
11. Laboratory and lectures: bone neoplasms, non-neoplastic bone disase, gastrointestinal tract, and small group CPC, USUHS, Bethesda, Maryland, Jan./Feb./Nov./Dec. 1995. [KMS] 8 hours

C. Papers Presented and Ancillary Course Lectures (Total 25 man-days).

1. "Metabolic Bone Disease," AFIP Staff Conference, February 1995. {KMS] 1hour
2. "Radiologic/Pathologic Correlation of Solitary Bone Lesions," IAP short course, Toronto,

Canada, 17 March 1995. [DES, KD] 4 hours

3. "Infectious Diseases of Bone and Arthritic Disorders of Bone," AFIP/ARP Orthopedic Pathology Course, Annapolis, Maryland, 3 and 4 April 1995, and AFIP/Washington, D.C., 3 and 4 October 1995. [TNV] 8 hours
4. "Role and Limitations of Pathology," AFIP/ARP Orthopedic Pathology Course, Annapolis, Maryland, 3-7 April 1995, and AFIP/Washington, D.C., 9-20 October 1995. [RBW] 2 hours
5. Unknown case discussions, AFIP/ARP Orthopedic Pathology Course, Annapolis, Maryland, 3-7 April 1995, and AFIP/Washington, D.C., 9-20 October 1995. [KMS, TNV, FWG, DES] 40 hours
6. "Radiologic/Pathologic Correlation of Solitary Bone Lesions," AFIP/ARP Problems in Anatomic Pathology Course, AFIP/Washington, D.C., 14 April 1995. [DES, RBW] 5 hours
7. "Radiologic/Pathologic Correlation of Solitary Bone Lesions," AFIP/ARP Current Advances in Surgical Pathology Course, Snow Mass, Colorado, 7 July 1995. [DES] 4 hours
8. "Growth and Development, Circulatory Disorders, Fibrous and Cystic, Cartilage, Osseous, Vascular, Round Cell, and Giant Cell Lesions of Bone," and laboratory, Canadian Orthopedic Association Pathology Course, Ottawa, Canada, 17-22 September 1995. [DES] 16 hours
9. "Radiologic/Pathologic Correlation of Solitary Lesions," Canadian Orthopedic Association Pathology Course, Ottawa, Canada, 17-22 September 1995. [DES] 3 hours
10. "Metabolic Disorders and Paget's Disease of Bone, Soft Tissue, and Periarticular Tumors," and laboratory, Canadian Orthopedic Association Pathology Course, Ottawa, Canada, 17-22 September 1995. [KMS] 6 hours
11. "Infectious Diseases of Bone and Arthritic Disorder," and Laboratory, Canadian Orthopedic Association Pathology Course, Ottawa, Canada, 17-22 September 1995. [TNV] 8 hours

D. Exhibits

1. Ragsdale B, Johnson F: Anatomic Aspects of Aging, National Museum of Health adn Medicine of the AFIP (permanent exhibit).
2. Ragsdale B, et al. Gunshot Wounds: A Historic Perspective, National Museum of Health and Medicine of the AFIP (permanent exhibit).

E. Poster Presentations

1. Kransdorf M, Sweet D. "Liposclerosing Myxofibrous Tumor of Bone" LSMFT, Radiologic Society of North America, 27th Annual Meeting, Chicago, Illinois, 29 November 1994. (Not previously reported)
2. Brown M, Wolov R, Sweet D, et al. "Effect of Extracorporeal Shock Wave on Bone and Soft Tissue in a Rabbit Model," 62nd Annual AAOS Meeting, 16-21 February 1995.

F. Study Sets

1. Orthopedic A, B, and C study sets (@ 280 glass slides @1000 2x2)
2. General Surgical Pathology Course/AFIP Study Set
   a. Orthopedic Pathology Study Section (#21 glass slides)
   b. Radiographic/Pathologic, three-part series: margins, matrix, periosteal reactions, glass slide study set (#25 glass slides)

RESEARCH

A. Research and Scholarly Activities with Manuscripts in Press or Submitted

Chapters and Articles

1. "Skeletal Radiology Needed by Pathologists," Schiller and Rosenberg, eds. *Orthopedic*

Pathology. [DES, IP]

2. "Infectious Diseases of the Skeleton," Conners and Mantz, eds. [TNV, DES/IP]
3. "An Analysis of a Retrieved Prodigy Femoral Prosthesis: A Two-Year Case Report," *Journal Arthroplasty*. [KHM, TNV, CAE/IP]
4. "Structural Bulk Allografts in Acetabular Reconstruction: Analysis of Two Grafts Retrieved Postmostem," *Journal of Bone and Joints Surgery.* [JPH, CAE, TNV/IP]
5. "53 Protein and Proliferating Cell Nuclear Antigen (PCNA) Expression in Small Round Cell Tumors of Bone and Adjacent Soft Tissue: A Study of 60 Cases," *Journal of Surgical Pathology*. [KD, SLA, TNV, RBW, DES/IP]
6. "Radiographic and Histologic Analysis of Acetabular Bone Grafts in Cementless Total Hip Arthroplasty." [JH, TNV/S]

Abstracts

1. See "EDUCATION (E.), Poster Presentations."

B. Research and Scholarly Activities with Manuscripts in Preparation

1. Cytokeratin Immunoperoxidase Reaction in the Diagnosis of Adamantinoma of Long Bone
2. Kashin-Beck Disease
3. Cartilage Tumors of the Sternum
4. Sclerosing Xanthoma of Flat Bones
5. Tissue Reactions to Prosthetic Wear and Corrosion
6. Ischemic Ossification
7. Histologic Diagnosis of Gout

C. Research Activities Ongoinq

1. Conventional Lipoma of Bone
2. Ossifying Lipoma of Bone
3. Liposclerosing Myxofibrous Tumor of Bone
4. The Structure of Articular Cartilage
5. Neuropathic Joint Disease
6. Immunohistochemistry/Clear Cell Chondrosarcoma

D. Other Research-Related Activities

The Orthopedic Pathology Learning Center (AFIP) was established in September 1985. It has been temporarily relocated to the AFIP/UPS Warehouse, Gaithersburg, Md.

E. Meetings Attended

The Gordon Research Conference on Bone Disease, IAP and ASCP/CAP. Pathology meetings yielding information on current research aspects of bone and joint disease that play an important role in guiding departmental consultative, education, and research efforts.

PUBLICATIONS

Book chapters

1. Sweet DE. Musculoskeletal manifestations of systemic lupus erythematosus. In: Antonovych TT, ed. *Pathology of Systemic Lupus Erythematosus.* Washington, DC: Armed Forces Institute of Pathology, American Registry of Pathology; 1995:79-99.

Journal Articles

1. Kransdorf MJ, Sweet DE. Aneurysmal bone cyst: concept, controversy, clinical presentation, and imaging. *AJR Am J Roentgenol.* 1995;164:573-580.

2. Devaney K, Wolov R, Sweet D, et al. MIC2 gene product detected by antibody to HBA71 antigen in small round cell tumors of bone and adjacent soft tissue: a study of 56 cases. *Clin Orthop*. 1995;310:176-187.
3. Wenig BM, Vinh TN, et al. Aggressive psammomatoid ossifying fibromas of the sinonasal region: a clinicopathologic study of a distinct group of fibro-osseous lesions. *Cancer*. 1995;76:1155-1165.

Abstracts

1. Brown M, Wolov R, Sweet D, et al. Effect of extracorporeal shock wave on bone and soft tissue in a rabbit model. Presented at the 62nd Annual Meeting of the American Academy of Orthopedic Surgery; February 16-21, 1995.

Miscellaneous

1. Sweet DE. Radiologic-pathologic correlation of solitary bone lesions. Syllabus, IAP short course #28, Toronto, Canada, 17 March 1995.
2. Sweet DE. Growth and developement, manifestations of disease, radiographic margins/periosteal reactions/matrix patterns and ancillary studies, pathogenesis of osteonecrosis, benign fibrous and cystic lesions, giant cell tumor and aneurysmal bone cyst, and chondromas of bone. Syllabus, AFIP/ARP and COA Orthopedic Pathology Courses, Annapolis, Md., April 1995, and Ottawa, Canada, September 1995.
3. Vinh TN, Sweet DE. Infectious disease of the skeleton. Syllabus, AFIP/ARP and COA Orthopedic Pathology Courses, Annapolis, Md., April 1995, and Ottawa, Canada, September 1995.

GOALS

Consultation

A. Provide accurate, timely, and meaningful diagnostic consultations in orthopedic pathology for patient care.

B. Maintain "state-of-the-art" diagnostic techniques and information to insure consultative excellence, including qualitative and quantitative histomorphometry in metabolic bone disease.

C. Eliminate existing "laboratory" backlog and take measures to preclude future backlog (1 month).

Education

A. Maintain the excellence of the Orthopedic Pathology Department's two annual courses: 3-week Basic Science and Orthopedic Pathology Course for military orthopedic surgery residents; 1-week Orthopedic Pathology Course for military pathologists, other federal pathologists, civilian pathologists, and related medical specialists.

B. Provide educational support in orthopedic pathology for nondepartmental AFIP-sponsored and/or AFIP/ARP-cosponsored courses as requested and as time permits, including but not limited to radiologic pathology, pediatric pathology, radiation pathology, renal pathology, comparative pathology, paleopathology, general surgical pathology, etc., AFIP Seminars.

C. Provide educational support in orthopedic pathology for local, national, and international medical societies; and institutes (e.g. IPA, ASCP/CAP, the American Academy of Orthopedic Surgery, the Canadian Orthopedic Association, and the International Skeletal Society.)

D. Develop a condensed orthopedic pathology study set (250 sets) consisting of approximately 100 to 200 glass slides and 300 to 400 2X2 Kodachromes, primarily for use during our 1-week pathology course. Complete sets would be provided for all military orthopedic surgery and/or pathology teaching programs, AFIP education loan programs, and 2X2 sets for the American Registry of Pathology (5 years).

E. Expand the number and content of the current orthopedic pathology contribution consisting of approximately 25 glass slides and 120 2X2 Kodachromes for the General Surgical Pathology Course/AFIP study sets.

G. Develop four interdisciplinary (pathology, radiology, orthopedic surgery) 3-day workshops on bone neoplasia, metabolic bone disease, inflammatory bone disease, and arthritis (5 years).

Research

A. Complete the series of articles on lipogenic and related bone lesions of bone, vascular tumors of bone, benign fibrous and cystic lesions of bone, adamantinoma of long bone, DNA/ploidy of synovial chondromas and chondrosarcomas, sternal cartilage tumors, and neuropathic joint (1 to 2 years).

B. Continue current combined cooperative research projects with outside medical centers as requested and as time permits (1 to 5 years). Anderson Orthopedic Clinic; San Diego Naval Medical Center, Orthopedic Surgery Department; and WRAMC Orthopedic Surgery Department.

C. Expand the radiologic/pathologic correlative concept as currently applied to bone neoplasia, creating a monograph series on bone and joint disorders, including normal growth and development and related disorders, metabolic, biomechanical, circulatory, inflammatory, neoplasia, and trauma (5 years).

D. Retrospective study to determine the validity of DNA content (ploidy studies) in accessing true malignant potential of active, borderline, in situ, low-grade, moderate-grade, and high-grade malignant cartilage tumors (5 years).

E. Retrospective follow-up study to evaluate DNA content (ploidy studies) and/or flow cytometry as a means of identifying true giant cell tumor malignant potential compared to light-microscopic diagnoses. Although 10% of giant cell tumors are labeled malignant, our files indicate that less than 1% actually metastasize, with many patients actually surviving their disease (5 years).

F. Develop and access new imaging techniques to accurately define the earliest stage and extent of avascular necrosis and evaluate the potential of laser surgery or liposuction as an early corrective measure (1 to 10 years).

G. Undertake additional independent and cooperative studies such as review and reclassification of the Codman Bone Sarcoma Registry (5 years).